REMARKS

Entry of the foregoing and further and favorable reconsideration of the subject application is respectfully requested.

By the present amendment, Claims 19 and 20 have been amended. Claims 21 and 22 have been canceled and Claims 23 and 24 have been added. No new matter has been added.

IN THE SPECIFICATION:

Turning now to the Official Action, the Examiner has not entered the amended abstract because a marked-up version of the amendment was not submitted. Herewith, Applicants submit a clean and a marked-up copy of the abstract. Applicants respectfully request the Examiner to replace the originally filed abstract with the currently amended abstract.

CLAIM REJECTED UNDER 35 U.S.C. § 112, FIRST PARAGRAPH:

The Examiner has rejected Claims 19-22 as allegedly not enabling. The Examiner alleges that the specification does not reasonably provide enablement for isolated DNA molecules whose expression is induced by *any* environmental stress. Applicants disagree.

Nevertheless, without conceding to the Examiner's rejection, to expedite the prosecution of the subject application, Applicants have amended Claim 19 to replace the phrase "environmental stress" by "osmotic stress." Therefore, Claim 19 now recites an isolated DNA molecule whose expression is induced by osmotic stress. Applicants direct

the Examiner's attention to the specification page 17, paragraph **[0041]**. Paragraph **[0041]** discloses that the osmotic stress induces the expression of C7 gene in a transgenic plant leaf to render the transgenic plant leaf resistant to osmotic stress. Additionally, Applicants direct the Examiner's attention to Tamura et al. Figures 7 and 8 in which practical data on the osmotic stress has been disclosed. Furthermore, Claims 21 and 22 have been canceled without prejudice of disclaimer. Therefore, the rejection as it relates to Claims 21 and 22 is moot.

Withdrawal of this rejection is respectfully requested.

The Examiner has further alleged that "the expression of a nucleotide sequence in a transgenic plant may or may not render the plant resistant to the type of stress that induces the expression of the native gene." The Examiner refers to page 18 of the specification stating that injury stress, osmotic stress, salt stress and low-temperature stress induce expression of the claimed gene, "but *dehydration* stress does not." Applicants disagree.

In defining enablement, MPEP § 2164.01 recites that:

> "Any analysis of whether a particular claim is supported by the disclosure in an application requires a determination of whether that disclosure, when filed, contained sufficient information regarding the subject matter of the claims as to enable one skilled in the pertinent art to make and use the claimed invention."

Whether there is "sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and that whether any necessary experimentation is 'undue,'" MPEP § 2164.01(a) provides a list of factors to be considered.

"These factors include, but are not limited to:

(A) The breath of the claims;
(B) The nature of the invention;
(C) The state of the prior art;
(D) The level of one of ordinary skill;
(E) The level of predictability in the art;
(F) The amount of direction provided by the inventor;
(G) The existence of working examples; and
(H) The quantity of experimentation needed to make or use the invention based on the content of the disclosure."

Applicants direct the Examiner's attention to the specification page 17, paragraph **[0041]**. Paragraph **[0041]**, as explained above, discloses that the osmotic stress induces the expression of C7 gene in a transgenic plant leaf to render the transgenic plant leaf resistant to osmotic stress. Applicants assert that after considering the data presented in the specification at paragraph **[0041]** and the data presented by Tamura et al. at Figures 7 and 8 it is clearly predictable and enabling that osmotic stress induces the expression of the isolated C7 DNA which renders a transgenic plant resistant to that osmotic stress.

Applicants further assert that since Claim 19 has been amended to replace the phrase "environmental stress" by "osmotic stress", there is considerable direction and guidance, there is high level of skill in the art at the time the application was filed and all of the methods needed to practice the claimed invention were well known.

Withdrawal of this rejection is requested.

The Examiner has also alleged that the specification does not provide enablement for isolated DNA molecules comprising nucleotide sequences obtained by nucleotide replacement, deletion or insertion in the nucleotide sequence of SEQ ID NO:2 or nucleotide sequence encoding SEQ ID NO:1. The Examiner alleges that the effects of inserting,

deleting or replacing of nucleotide are unpredictable. The Examiner purports that without undue experimentation, one skilled in the art can not determine how to replace, insert or delete nucleotides in SEQ ID NO:2 or in a nucleotide sequence encoding SEQ ID NO:1 without altering or eliminating the function of SEQ ID NO:1. Applicants disagree.

Not to acquiesce in the Examiner's rejections, but solely to facilitate prosecution, Applicants have canceled part (b) of Claim 19 and Claim 21 and have added new Claims 23 to 25. Claim 23 now specifies that the isolated nucleotide sequence corresponds to SEQ ID NO:3, while dependent Claims 24 and 25 recite other features, such as by reciting that the sequence has no more than 5 additions, deletions, or substitutions; or sequences with %80 homology thereto. Support for Claims 23 to 25 can be found through out the specification, especially Paragraphs **[0008]** and **[0009]**.

Applicants believed that these amendments have rendered moot the notion that Applicants were not in possession of the claimed invention, that one of skill in the art could not make or use the claimed invention, that undue experimentation is needed to make or use the invention or that one of skill in the art would not understand what is claimed.

Accordingly, Applicants request withdrawal of this rejection.

The Examiner states that the specification does not provide enablement for an isolated DNA molecule encoding an enzymatically active polypeptide. The Examiner further states that based on the specification, at pages 16-17, SEQ ID NO:1 lacks the kinase domain characteristic of receptor-like kinase protein, indicating that it may be a type I transmembrane protein. Therefore, the polypeptide of SEQ ID NO:1 may exert its effect

non-enzymatically, and is thought to function through self-dimerization and interaction with other protein molecules.

Applicants have amended the claims to delete the phrase "enzymatic activity." Accordingly, this rejection as it pertains to the new claims and claims as amended is respectfully moot.

Withdrawal of this rejection is requested.

Rejections Under U.S.C. § 112, Second Paragraph:

Claims 19-22 have been rejected under U.S.C. § 112, second paragraph, as allegedly being indefinite.

The Examiner has rejected Claim 19 as allegedly being indefinite for the recitation of phrases "environmental stress" and "wherein said amino acid sequence is induced." Not to acquiesce in the Examiner's rejection, and to expedite prosecution, Applicants have amended Claim 19 to replace "environmental stress" by "osmotic stress;" and in amending Claim 19 Applicants have incorporated the Examiner's suggestion to clarify the way an amino acid sequence would be induced. Therefore, this rejection as it pertains to Claim 19 as amended is moot.

Withdrawal of this rejection is requested.

The Examiner has rejected Claim 20 as allegedly being indefinite for reciting the phrase "encoding an amino acid sequence according to claim 19." Not to acquiesce in the Examiner's rejection, and to expedite prosecution, Applicants have amended Claim 20 to

delete this phrase without prejudice or disclaimer. Therefore, this rejection as it pertains to Claim 20 as amended is moot.

Withdrawal of this rejection is requested.

The Examiner has rejected Claim 21 as allegedly indefinite for reciting the phrases "encoding an enzymatically active polypeptide as claimed in claim 19" and "can hybridize under stringent conditions." Not to acquiesce in the Examiner's rejection, and to expedite prosecution, Applicants have canceled Claim 21 thus rendering this rejection moot.

Withdrawal of this rejection is thus requested.

Rejections Under 35 U.S.C. § 102(b):

The Examiner has rejected Claims 19 and 21-22 under 35 U.S.C. § 102(b) as allegedly being anticipated by Lee et al. (Proc. Natl. Acad. Sci. USA, May 1999, Vol. 96, pages 5873-5877). The Examiner alleges that Lee et al. teaches an isolated DNA molecule encoding a protein other than SEQ ID NO:1, whose expression is induced by environmental stress, including osmotic pressure stress, salt stress and low-temperature stress. Furthermore, the expression of this isolated DNA renders transgenic plant cells resistant to environmental stress, including osmotic pressure stress, salt stress and low-temperature stress. Applicants traverse.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California, 814, F.2d 628 (Fed. Cir. 1987).*

Lee et al. teaches an isolated DNA molecule which encodes an amino acid sequence other than SEQ ID NO:1. The presently claimed invention teaches an isolated DNA encoding an amino acid sequence of SEQ ID NO:1 which renders a transgenic plant resistant to osmotic stress. Therefore, each and every element of the claims of the claimed invention is not described, either expressly or inherently, in the reference cited by the Examiner. Applicants assert that at least the amino acid sequence claimed by the present application is completely different from what is described in Lee et al. From the foregoing it is clear that Lee et al. does not anticipate the presently claimed invention.

Withdrawal of this rejection is requested.

From the foregoing, further and favorable reconsideration in the form of a Notice of Allowance is believed to be next in order and such action is earnestly solicited.

In the event that there are any questions concerning this amendment, or the application in general, the Examiner is respectfully urged to telephone the undersigned so that prosecution of this application may be expedited.

CONCLUSION

In view of the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order. Such action is earnestly solicited.

In the event that there are any questions relating to this application, it would be appreciated if the Examiner would telephone the undersigned attorney concerning such questions so that prosecution of this application may be expedited.

Respectfully submitted,
BURNS, DOANE, SWECKER & MATHIS, L.L.P.

By: _____
Robert G. Mukai
Registration No. 28,531

P.O. Box 1404
Alexandria, Virginia 22313-1404
(703) 836-6620

Date: June 27, 2003

ABSTRACT

A novel gene useful for production of a plant exhibiting resistance to environmental stress is provided. According to this invention, C7 gene, a novel gene encoding a receptor-like protein which is induced in response to injury stress, osmotic pressure stress, salt stress or low-temperature stress, is provided. Moreover, a polypeptide encoded by this gene is provided. A plant exhibiting resistance to environmental stress can be produced by incorporation of this novel gene into the plant.

MARKED-UP ABSTRACT

A novel gene useful for production of a plant exhibiting resistance to environmental stress is provided. According to this invention, C7 gene, a novel gene encoding a receptor-like protein which is induced in response to injury stress, osmotic pressure stress, salt stress or low-temperature stress, is provided. Moreover, a polypeptide encoded by ~~said~~ this gene is provided. A plant exhibiting resistance to environmental stress can be produced by incorporation of ~~said~~ this novel gene into the plant.